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# WOODCOCK STATUS REPORT

## 1963



**UNITED STATES DEPARTMENT OF THE INTERIOR**  
**FISH AND WILDLIFE SERVICE**  
**BUREAU OF SPORT FISHERIES AND WILDLIFE**  
**Special Scientific Report--Wildlife No 76**

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## WOODCOCK STATUS REPORT, 1963

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## ABSTRACT

An index of size of the woodcock breeding population in 1963 was obtained from singing-ground counts conducted in 20 eastern and central States and 4 eastern Canadian Provinces. East of the Appalachians, 161 routes run in both 1962 and 1963 were available for comparison. West of the mountains, 118 comparable routes were covered.

The population index declined 7 percent in the East, but rose 16 percent in the West. For both regions combined, the index increased 6 percent. It is doubtful if this represents a significant change in size of the breeding population from 1962 to 1963.

An index of woodcock reproductive success in 1961 and 1962 was obtained from age ratios in the hunting kill as determined from 25,426 wings contributed by hunters.

Age ratios in the hunting kill varied among States and Provinces each year. For the combined kill, the ratio of immatures per adult female was 1.9 in 1961 and 1.8 in 1962. The ratio of immatures per adult (males and females combined) in the continent-wide kill was 1.1 in both years.



## INTRODUCTION

Two major surveys are conducted each year to obtain information concerning the population status of woodcock (Philohela minor). The first, a singing-ground survey, is made in the spring in States and Provinces where woodcock nest, its purpose being to obtain an index of breeding-population size. The second is a wing-collection survey conducted during the hunting season to obtain an index of reproductive success, and to gather information concerning hunter activity in relation to shooting regulations.

## SINGING-GROUND SURVEY

In the spring, male woodcock voice a characteristic call ("peent") while on the ground, and perform the "flight song" (wing twittering and vocal chirping) while in the air. These calls, part of the breeding behavior of males, occur in the morning and evening and form the basis for censusing them in the singing-ground survey. Counts of "singing" birds on the same routes each year provide a means of measuring their relative abundance during the breeding season.

Counts are made during the evening singing period, since limited studies have indicated performance is more consistent in the evening than in the morning. Males begin to call 10 to 30 minutes after sunset, depending on weather conditions, and continue for about 35 minutes. Counting begins when singing commences and terminates when it ceases.

Length of routes varies with the amount of suitable woodcock habitat. They may be short (2-3 miles) in continuous breeding habitat, longer in areas of scattered breeding cover. Routes are established along roads, and cars are used for transportation. Fixed listening points

(stops) adjacent to suitable woodcock habitat are selected along the routes. Stops are at least 0.4 mile apart since "peents" can be heard for about 0.2 mile. "Flight songs" can be heard for a much greater distance. Counts of 2-minutes' duration are made once at the same stops each year. The number of different birds heard "peenting" (and "flighting," if not heard "peenting") per route is the index of abundance for each route.

#### Source of data

During March, April, and May, 1963, cooperators in 20 eastern and central States and 4 eastern Canadian Provinces made counts on 387 routes. Population change from 1962 to 1963 was determined from counts made on 279 routes covered in both years (comparable routes).

In the Eastern Region, 161 comparable routes were available for analysis (an increase of 13 from 1962). For the Western Region, 118 comparable routes were covered (an increase of 3). In 1963, Michigan cooperators were asked to record numbers of birds heard giving only the "flight song" as well as numbers of "peenting" birds, in order to facilitate analysis of data obtained from counts made on routes that were randomly selected (discussed later in the report). This procedure should not have affected comparability of counts with those made in other years or in other areas, because cooperators in past years were instructed to include "flight songs" if such birds were not heard "peenting."

In addition to routes covered in both years, 11 new routes were run in the Eastern Region and 16 in the Western Region in 1963. These routes will strengthen the survey since they can be used to compare 1963 populations with those of 1964, provided they are covered again next year.

#### Method of analysis

Survey data of previous years have been analysed in two ways to yield indexes of woodcock abundance: The number of

woodcock heard per stop, and the number of woodcock heard per route. Although Robbins (Woodcock Newsletters: No. 1, 1958; No. 2, 1959) has shown that both values yield approximately the same results in terms of year-to-year changes in relative population levels, the number of birds per route is believed preferable because the count for each route then is given weight in proportion to the number of woodcock present. The use of the average number of birds per stop gives each route equal weight, even though some routes represent many more stops and much more habitat than others. Listening points are located in suitable breeding habitat, and all on a route must be covered during a period of about 35 minutes. Thus, routes with the most stops occur in more continuous breeding habitat. Counts on these routes could be expected to be higher than on routes with a few stops located in a limited amount of suitable cover where much of the available listening time is spent in driving between stops.

Adjustments of the data were made for routes that did not have the same number of stops each year. Data for the year with the larger number of stops were reduced to make them comparable to those for the year with the smaller number of stops. For example, 11 birds were reported in 1962 for 12 stops on route 27 in Maine, and 10 birds were reported for 11 stops along the same route in 1963. For comparative purposes, the 11 birds in 1962 were reduced by 8 percent (the increase in stops covered) to a total of 10 birds, the estimated number that would have been heard had 11 stops been covered. In most instances, the necessary adjustments were slight (table 1). Results of counts on individual routes covered in 1962 and 1963 are shown in tables 6 and 7.

### Weighting factors

When survey information from different States and Provinces is combined, it must be weighted because the number of routes in each area is not related to woodcock population size. Adequate figures on population density in suitable breeding habitat are lacking. As a substitute, the average number of woodcock per route was weighted according to the

uncultivated area of each State or Province (adjusted in a few cases for large portions that occur in ecological regions where there is no woodcock habitat). The relative sizes of areas are shown in table 2. Further details are in the 1960 Woodcock Status Report (U. S. Fish and Wildlife Service, Special Scientific Report--Wildlife No. 50). It is realized that much unfavorable nesting habitat is included.

## Results

Table 1 shows the changes from 1962 to 1963 in numbers of woodcock recorded on survey routes, adjusted only for varying numbers of stops along the same routes in the 2 years. Population changes are shown in table 2. The population index (average number of birds per route, weighted by the proportion of uncultivated land area in each State and Province) declined 7 percent in the Eastern Region from 1962 to 1963 but increased 16 percent in the Western Region. The continent-wide change (both regions combined) was a 6-percent increase.

The mean difference in number of birds per route (1962 minus 1963) was calculated for the 10 States and Provinces in which 10 or more comparable routes were covered each year. Although 10 or more comparable routes were covered each year in 7 States and Provinces in the East, only counts in Connecticut showed a statistically significant change (decline) in mean numbers of birds per route (mean difference and standard error,  $-1.23 \pm 0.41$ ). Therefore, it is unlikely that there was an important change in woodcock numbers in the Eastern Region.

Information is more limited for the West because only 3 States had 10 or more comparable routes. Michigan and Minnesota showed a significant increase in mean numbers of birds per route (Michigan,  $2.04 \pm 0.60$ ; Minnesota,  $1.50 \pm 0.53$ ). Possibly, some of the increase noted for Michigan was caused by more birds being recorded giving only "flight songs"; however, as indicated earlier, the change in recording procedures should not have affected comparability of counts.

In 1962, forms were distributed late to Kentucky co-operators. As a result, counts were made in April, whereas in 1963 most counts were made in March. The large increase noted in the State (from 0.1 bird per route in 1962 to 2.0 in 1963) may have occurred because more migrant birds were counted in 1963. Elimination of counts in Kentucky for the 2 years did not appreciably alter overall results since, without Kentucky, the weighted change was a 13-percent increase for the Western Region and a 4-percent increase for both regions combined (as compared with a 16-percent increase for the region and a 6-percent continent-wide increase).

Lack of adequate numbers of routes in most States and Provinces in the West makes it uncertain whether woodcock numbers increased significantly in the region. However, for the continent as a whole, and in view of the many factors affecting reliability of the survey, it seems doubtful that there was an important change in woodcock numbers from 1962 to 1963.

#### Effects of freezing weather in Louisiana

For the second consecutive winter there was a prolonged period of subnormal temperatures in Louisiana during January and February 1963. Freezing temperatures prompted concern over survival of wintering birds since they have difficulty feeding when the ground is frozen, and since Louisiana is their principal wintering ground.

Biologists of the Louisiana Wild Life and Fisheries Commission obtained weights from 17 birds shot in a 2- to 3-day period of subfreezing temperatures in January 1963. The average weight of these birds was about 10 percent below the weight considered normal for that time of year. Although the sample size was small, the amount of weight loss seems reasonable because weights of 187 birds shot during a more prolonged subfreezing period in January 1962 averaged 14 percent below normal. Previous studies have indicated woodcock can survive a weight loss of at least 25 percent. Therefore, it is unlikely that freezing weather caused severe losses of birds. Results of the 1963 singing-ground counts also did not indicate important loss of birds during the winter.

### Recommendations to cooperators

Further study will improve the value of the survey, but usefulness of each count will depend upon its comparability with all other counts. Therefore, participants should read survey instructions each year and follow them as closely as possible. Several routes covered in 1963 were not included in the analysis because stops on the routes were less than 0.4 mile apart, or because counts were made for a period much longer than 35 minutes. In 1963, a number of routes were covered during the full moon when frequency of "singing" is inconsistent. These counts were used in the report, since coverage in some States and Provinces would have been completely inadequate if they had not been included. Nevertheless, counts from such coverages reduced comparability of data, and cooperators should make every attempt to run routes under proper conditions.

### Random sampling in Michigan

Routes used in the singing-ground survey to date have been established in areas where woodcock were known to be present, and routes have been replaced from time to time as the habitat changed. Since these routes are not uniformly distributed in all types of habitat (poor as well as good), counts from them are probably not representative of average population density in the various States and Provinces. Furthermore, these counts may not properly reflect changes in the relative numbers of birds from one year to the next. At present, we can only assume that drastic changes in size of the breeding population will be detected.

To clarify these important points, a study was initiated in 1962 to determine the feasibility of using randomly-selected routes to obtain representative measurements of breeding-population density and changes from one year to the next. With the assistance of personnel in the Michigan Conservation Department and Region 3 (Northcentral) of the Bureau, 126 routes were selected at random in the Lower Peninsula of Michigan. Most routes (75) were selected in the northern portion of the Lower Peninsula where satisfactory woodcock habitat is more abundant.

Each random route was 8 miles in length and contained 21 stops at 0.4-mile intervals. Stops were examined by car prior to the survey period and were judged for their suitability for "singing" woodcock during the breeding season. Stops were classified as good, satisfactory, poor, and unsatisfactory on the basis of type and distribution of vegetative cover within a 0.2-mile radius (approximate maximum hearing range of "peenting" woodcock) from the stop. Our knowledge of what constituted satisfactory singing-ground habitat was quite limited. For this reason, judgment of stop suitability was conservative, and comparatively few stops were considered unsatisfactory.

Since 2 minutes would be spent listening at a stop during a total census period of 35 minutes, many of the 21 stops on each route could not be surveyed in the allotted time. It was also anticipated that many stops considered poor or unsatisfactory would lack "singing" birds when counts were made. Therefore, the sample included all satisfactory or good stops, but only every fourth poor and every sixth unsatisfactory stop. Stops judged good or satisfactory were sampled out of proportion to their abundance to increase the efficiency of the survey.

Because many routes would lack "singing" birds at the first stop, a starting time for counting was given for each route. This was the time at which 84 percent (mean time plus one standard deviation) of the birds heard in previous years began singing at the first stop on operational routes run in the State.

Random routes were censused for the first time in 1963. Results of counts are shown in tables 3 and 4. As expected, some stops and even some routes could not be censused because of traffic conditions, time limitations, noise, etc. Thus, average numbers of birds heard on stops of each category covered in each of the two strata were used to estimate numbers of birds that would have been heard had all stops been covered.

The average number of birds heard per stop agreed closely with our judgment of suitability of stops; the highest averages occurred on good stops and the lowest on unsatisfactory stops (table 3). Table 4 shows the relative population sizes of

"peenting" birds expanded from counts on both types of routes. These population values are "indexes" because all "peenting" birds probably were not heard when numerous birds were performing at a stop, or when extraneous noises reduced efficiency but did not eliminate hearing. Population indexes were obtained as follows:

$$\frac{\text{Average number of peenting birds per stop}}{\pi r^2 \text{ (where } r = 0.2 \text{)}} \times \text{Total sq. miles in each stratum}$$

Population indexes indicated by "peents" and "flight songs" combined are not shown because the aerial call can be heard at a distance greater than 0.2 mile.

As shown in table 4, population indexes indicated by counts on operational routes were much higher than those calculated from random routes. Furthermore, population indexes based on operational counts were nearly equal in both portions of the Lower Peninsula. In contrast, the population index from random routes was nearly twice as large in the northern Lower Peninsula as in the southern. The difference in population indexes indicated by the two types of counts was caused by the higher average number of birds per stop recorded on operational routes, and occurred because most operational routes were selected in areas known to contain woodcock.

Population sizes indicated from counts made on random routes probably are much more representative of actual population size than are counts made on non-random operational routes. Although the population figures from random counts are indexes, they can be compared with values obtained in similar manner in later years and in other areas.

The same routes will be covered again in 1964. With 2 years of data, it will then be possible to compare the relative size of the population and the relative change in woodcock numbers from 1963 to 1964 on both random and operational routes.



It is premature to conclude that random routes are a feasible means of determining a reliable index of woodcock population size. Nevertheless, results obtained in 1963 indicate that the method shows much promise.

#### WING-COLLECTION SURVEY

In addition to singing-ground counts made each spring to determine size of the woodcock population, wing-collection surveys are conducted to obtain an annual index of woodcock productivity, based on the age and sex composition of the hunting kill as determined from wings.

##### Source of wings

In 1961 and 1962, wing-collection envelopes were mailed to more than 1,500 hunters who had cooperated in previous wing collections. Names and addresses had been originally supplied by State and Provincial Conservation Departments, U. S. game management agents, and cooperators in the singing-ground survey. Names of additional hunters were obtained from wing-collection envelopes distributed by individuals already taking part in the survey. In 1962, the wing collection in Canada was conducted by the Canadian Wildlife Service. Hunters responded exceedingly well to the survey. They returned envelopes containing 10,111 wings in 1961 and 15,315 wings in 1962.

##### Age and sex determination

Two techniques were used to determine the age of a bird from which a wing was taken. The method used most is based on differences between young and adults in the pattern and color of the tips of the inner flight feathers. A description of this technique will soon be published. The second method is based on the fact that adult woodcock molt rather late in the summer, which means that their flight feathers are considerably newer than those of young birds. Age can be determined by microscopic examination of the tips of the

outer flight feathers of adults which show less wear than those of young birds (Sheldon, W., F. Greeley, and J. Kupa. 1958. Aging fall-shot American woodcock by primary wear. Jour. Wildl. Mgmt., 22:310-312). This method of age determination was used when the inner flight feathers were missing or badly damaged.

Sex was determined from the outer three flight feathers, which are wider and longer in females (Blankenship, L. 1957. Investigations of the American woodcock in Michigan. Report No. 2123, Mich. Dept. Cons., 217 pp.).

### Method of analysis

Previous studies have indicated that woodcock probably are promiscuous during the breeding season. This means that a substantial loss of adult males could occur without adversely affecting annual production. Therefore, the ratio of young (immatures of each sex) to adult females in the hunting kill may be the most useful measure of reproductive success each year.

The age and sex composition of the kill may not reflect the actual age and sex composition of the population, because shooting may result in killing a higher proportion of one age or sex than another. However, year-to-year comparisons of immatures per adult female provide a means of obtaining an index of changes in reproductive success.

### Weighting factors

Since the number of wings received from each State and Province was not proportional to the kill in that State or Province, wing data for each year were adjusted so that age ratios from areas with the largest kills carried the most weight in the overall compilation. The average kill in 10 States and Provinces from which data were available for the 1959-61 hunting seasons was used for weighting. These areas accounted for 78 percent of the wings received each year. It was assumed that the weighted ratios from these wings were representative of the ratios in the continent-wide kill.

## Results

Table 5 shows the ratios of immatures per adult female for States and Provinces from which 100 or more wings were received each year. Also shown are the ratios of immatures per adult (adult males and females combined).

The number of immatures per adult female in the kill varied among States and Provinces each year (as did the number of immatures per adult). The ratio of immatures per adult female in the continent-wide kill, weighted by kill information, was 1.9 in 1961 and 1.8 in 1962. The weighted number of immatures per adult (both sexes combined) was 1.1 in both years.

Despite apparent lack of change in breeding success or population size, the number of woodcock wings received per U. S. hunter contacted was 30 percent higher in the 1962 hunting season, indicating shooting was much better than in 1961. This suggests that weather, timing of migration, or other factors, rather than a difference in size of the population, resulted in a larger kill in 1962.

## ACKNOWLEDGEMENTS

This report would not be possible without the cooperation of the Canadian Wildlife Service, State and Provincial Conservation Departments, and personnel in Regions 3, 4, and 5 of the Bureau.

Appreciation is expressed to the many individuals who participated in singing-ground counts and wing collections. Special thanks are due to personnel in the Michigan Conservation Department and the U. S. Forest Service, as well as private citizens of the State, for their coverage of random routes in 1963.

Table 1.--Woodcock Recorded on Comparable Singing-Ground Routes,  
1962 and 1963

EASTERN REGION

State or Province	Number of Comparable Routes	Total Woodcock on Comparable Routes		Adjusted Total Woodcock on Comparable Routes	
		1962	1963	1961	1962
Connecticut	13	64	48	64	48
Delaware	1	8	2	8	2
Maine	37	375	346	366	346
Maryland	1	5	3	5	3
Massachusetts	6	55	52	54	52
New Brunswick	10	109	98	100	96
New Hampshire	13	84	69	82	69
New Jersey	3	11	13	11	13
New York	28	180	183	173	179
North Carolina	4	3	2	3	2
Nova Scotia	11	71	53	60	51
Pennsylvania	25	165	158	156	152
Prince Edward Island	4	29	25	25	23
Vermont	5	41	33	41	33
Regional Total	161	1,200	1,085	1,148	1,069
Percentage Change			-10		-7

WESTERN REGION

Illinois	3	11	6	11	6
Indiana	3	23	29	23	29
Iowa	5	9	16	9	16
Kentucky	7	1	15	1	14
Michigan	51	551	631	525	619
Minnesota	14	69	89	68	89
Ohio	5	58	64	53	62
Ontario	7	30	32	30	30
West Virginia	9	38	45	37	45
Wisconsin	14	68	81	68	80
Regional Total	118	858	1,008	825	990
Percentage Change			+17		+20
Continental Total	279	2,058	2,093	1,973	2,059
Percentage Change			+2		+4

Table 2.--Changes in Woodcock Recorded on Singing-Ground Routes,  
1962 and 1963

EASTERN REGION

State or Province	Percentage of Uncultivated Land Area	Number of Comparable Routes	Average Number of Birds per Route		Percentage Change from 1962
			1962	1963	
Connecticut	0.78	13	4.9	3.7	-25
Delaware	0.23	1	8.0	2.0	-
Maine	5.42	37	9.9	9.4	- 5
Maryland	1.22	1	5.0	3.0	-
Massachusetts	1.31	6	9.0	8.7	-
New Brunswick	4.87	10	10.0	9.6	- 4
New Hampshire	1.57	13	6.3	5.3	-16
New Jersey	1.09	3	3.7	4.3	-
New York	6.66	28	6.2	6.4	+ 3
North Carolina	7.11	4	0.8	0.5	-
Nova Scotia	3.72	11	5.5	4.6	-16
Pennsylvania	6.29	25	6.2	6.1	- 2
Prince Edward Is.	0.27	4	6.2	5.8	-
Vermont	1.42	5	8.2	6.6	-
Regional Total and Weighted Average *	41.96	161	6.19	5.76	- 7

WESTERN REGION

Illinois	3.60	3	3.7	2.0	-
Indiana	2.74	3	7.7	9.7	-
Iowa	0.39	5	1.8	3.2	-
Kentucky	4.39	7	0.1	2.0	-
Michigan	7.50	51	10.3	12.1	+17
Minnesota	4.23	14	4.9	6.4	+31
Ohio	3.92	5	10.6	12.4	-
Ontario	20.79	7	4.3	4.6	-
West Virginia	3.96	9	4.1	5.0	-
Wisconsin	6.51	14	4.9	5.7	+16
Regional Total and Weighted Average	58.03	118	5.39	6.25	+16
Continental Total and Weighted Average	99.99	279	5.72	6.04	+ 6

\* Weighted averages based on proportion of total land area and average number of birds per route in each State and Province.

Table 3.--Results of Counts Made on Randomly Selected Woodcock Routes in Lower Michigan in 1963

Stop Classification	Total Number of Stops		Percentage of Stops Covered		Average Number of Birds Heard Per Stop			
	North*	South	North	South	"Peents"		"Peents" and "Flight Songs" Combined	
					North	South	North	South
Good	115	18	60	50	0.99	0.89	1.19	1.11
Satisfactory	596	197	57	58	0.49	0.47	0.61	0.53
Poor	757	640	21	23	0.30	0.13	0.42	0.19
Unsatisfactory	65	258	31	18	0.05	0.06	0.10	0.15
Totals and Weighted Averages**	1,533	1,113	38	29	0.42	0.19	0.54	0.26

Table 4.--Comparison of Counts Made on Operational and Randomly Selected Woodcock Routes in Lower Michigan in 1963

Type of Route	Number of Stops	Total Land Area (sq. mi.)		Average Number of "Peenting" Birds Heard per Sq. Mi. (Avg. no. per stop $\div$ 0.1257***)		Population Index (Avg. no. of birds per sq. mi. $\times$ total land area)	
		North	South	North	South	North	South
Operational	422	18,297	22,187	9.55	7.32	174,736	162,409
Random	2,646	18,297	22,187	3.34	1.51	61,112	33,502

\* North includes counties in northern 45 percent of Lower Peninsula; South includes counties in southern 55 percent.

\*\* Weighted averages based on total number of stops

\*\*\*  $0.1257 = \text{area covered at each stop (pi } r^2, \text{ where } r = 0.2)$

Table 5.--Changes in Woodcock Age Ratios from 1961 to 1962, Based on the Wing-Collection Survey

Harvest Area	Percentage of "Total" Kill	Number of Wings		Age Ratios				Percentage Change from 1961 in Immatures per Adult Female
				Immatures per Adult		Immatures per Adult Female		
		1961	1962	1961	1962	1961	1962	
Connecticut	5.73	346	537	1.8	1.4	3.7	2.5	-32
Louisiana	--	439	258	1.9	2.6	3.3	5.1	+55
Maine	9.49	1,748	2,626	1.2	1.2	2.0	1.9	- 5
Massachusetts	4.33	173	649	1.1	0.9	2.6	1.4	-46
Michigan	25.41	1,402	1,703	1.1	1.0	1.6	1.6	0
Minnesota	--	180	292	1.1	1.0	2.0	1.8	-10
New Brunswick	1.90	551	858	1.2	1.2	2.1	1.9	-10
New Hampshire	--	652	979	0.9	0.9	1.5	1.5	0
New Jersey	10.62	597	911	1.5	1.4	2.7	2.2	-19
New York	24.97	1,045	1,564	0.8	0.9	1.4	1.6	+14
Nova Scotia	--	0	422	--	2.2	--	4.1	--
Ohio	--	134	120	1.2	1.1	2.0	1.4	-30
Ontario	--	418	751	0.9	0.8	1.6	1.4	-12
Pennsylvania	3.46	956	1,545	1.0	1.0	1.8	1.6	-11
Quebec	2.23	183	260	0.7	0.9	1.2	1.4	+17
Vermont	--	229	354	0.8	0.8	1.2	1.2	0
West Virginia	--	71	143	--	1.2	--	1.9	--
Wisconsin	11.86	890	1,238	1.1	1.4	1.6	2.3	+30
Overall Weighted Ratios*				1.1	1.1	1.9	1.8	- 5

\* Weighted ratios based on average kill from 1959-61 in 10 States and Provinces for which wing and kill data were available.



Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>CONNECTICUT</u>								
1	Hartford Co. Glastonburg	M. Belden	9	8	1.13	6	8	.75
2	Hartford Co. Barkhamsted #2	A. Lamson	8	10	.80	5	10	.50
3	Hartford Co. Farmington	J. Bishop	4	6	.67	4	6	.67
5	Litchfield Co. Litchfield #1 & 2	G. Loery**	9	7	1.29	5	7	.71
9	New Haven Co. Guilford-No. Branford	O. Beckley	1	6	.17	1	6	.17
10	New Haven Co. Guilford	O. Beckley	3	6	.50	3	6	.50
11	Tolland Co. Shenipsit #2	R. Billard	6	7	.86	5	7	.71
12	Tolland Co. Shenipsit #3	R. Billard	2	7	.29	2	7	.29
14	Hartford Co. Barkhamsted #1	M. Belden**	8	11	.73	5	11	.46
15	Litchfield Co. Sandtown Rd.	W. Sandrini	2	6	.33	1	6	.17
16	New London Co. Montville	R. Billard & M. Belden**	1	6	.17	1	6	.17
17	Middlesex Co. Portland	M. Arnold	4	7	.57	3	7	.43
18	New Haven Co. Wallingford #1	H. Bluege	7	6	1.17	7	6	1.17
TOTAL			64	93	.69	48	93	.52
<u>DELAWARE</u>								
2	New Castle Co. Golts	A. Florio	8	9	.89	2	9	.22
TOTAL			8	9	.89	2	9	.22

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MAINE</u>								
2	Aroostook Co. Ashland	H. Carson	9	11	.82	10	11	.91
3	Aroostook Co. Oxbow	H. Carson	9	13	.69	7	13	.94
7	Aroostook Co. Hodgdon	H. Mendall	4	8	.50	5	8	.62
10	Franklin Co. Salem	R. Boettger	10	8	1.25	12	8	1.50
11	Hancock Co. Whalesback	J. Peppard	11	9	1.22	9	9	1.00
15	Hancock Co. Mud Creek (Lamoine)	J. Peppard	16	10	1.60	12	10	1.20
19	Kennebec Co. Readfield Depot	Mrs. W. DeGarmo	12	11	1.09	--	--	--
20	Kennebec Co. Belgrade Stream	Mrs. W. DeGarmo	8	11	.73	--	--	--
21	Knox Co. St. George	K. Anderson	13	10	1.30	12	10	1.20
24	Penobscot Co. Greenbush	W. Robinson**	17	10	1.70	12	10	1.20
27	Penobscot Co. Kenduskeag	D. Holmes	11	12	.92	10	11	.91
35	Piscataquis Co. T 4, R 10	I. Sargent	10	5	2.00	9	5	1.80
36	Piscataquis Co. Trout Brook	E. Damon	6	8	.75	7	8	.88
37	Sagadahoc Co. Bowdoinham (Ridge Rd.)	C. Tuttle	9	7	1.29	11	7	1.57
44	Waldo Co. Sandy Point	D. Holmes	10	9	1.11	9	7	1.29
45	Washington Co. Calais	H. Stanhope	6	6	1.00	6	6	1.00
46	Washington Co. Charlotte #1	H. Mendall	15	7	2.14	18	7	2.57

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MAINE</u> (continued)								
47	Washington Co. Charlotte #2	H. Mendall	16	8	2.00	10	8	1.25
51	Washington Co. Alexander (Lake Rd.)	J. Dudley	14	7	2.00	9	6	1.50
52	Washington Co. Edmunds #1	L. Bagley	5	6	.83	5	6	.83
53	Washington Co. North Trail (1st half)	A. Davis	6	7	.86	7	6	1.17
53A	Washington Co. North Trail (2nd half)	A. Davis	6	7	.83	4	7	.57
54	Washington Co. Edmunds #3	L. Bagley	7	8	.88	9	8	1.13
59	York Co. Lyman	D. Morston	9	10	.90	7	9	.78
72	Cumberland Co. Hatch-Merril Br. Rd.	H. Brown & C. Beane**	14	8	1.75	15	8	1.88
85	Kennebec Co. Sidney Line	K. Anderson	7	10	.70	7	10	.70
87	Kennebec Co. Belgrad Rt. 135	Mrs. W. DeGarmo	17	14	1.21	--	--	--
90	Lincoln Co. Dresden Mills	E. Baker	11	6	1.83	--	--	--
99	Penobscot Co. No. Branford, Rt. 11	M. Smart	13	11	1.18	15	11	1.36
108	Piscataquis Co. Medford, Rt. 16	M. Smart	12	12	1.00	14	12	1.17
111	Piscataquis Co. Abbot	M. Smart	13	10	1.30	15	10	1.50
115	Sagadahog Co. Georgetown Line	K. Anderson	8	10	.80	8	10	.80
122	Waldo Co. Winterport	D. Holmes	14	14	1.00	9	12	.75
123	Washington Co. Charlotte Sta. Rd.	H. Mendall	13	8	1.63	9	8	1.12

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	birds per
MAINE (Continued)								
129	Washington Co. Marion, Rt. 14	J. Peppard	--	--	--	15	12	1.25
136	York Co. Maplewood	H. Brown & D. Stanton	--	--	--	6	8	.75
138	Sagadahoc Co. Route #138	C. Tuttle**	11	12	.92	8	12	.67
141	Franklin Co. New Sharon	R. Boettger	6	9	.67	11	9	1.22
149	Somerset Co. E. New Portland	R. Boettger	7	9	.78	8	9	.89
151	Cumberland Co. Harpwell Neck	C. Huntington	11	7	1.57	9	7	1.29
152	Washington Co. Meddybemps	H. Mendall	10	7	1.43	6	7	.86
154	Cumberland Co. Brunswick	F. Whitman & H. Tyler, Jr.	--	--	--	16	11	1.46
156A	Kennebec Co. Oak Hill Rd.	H. Brown & C. Beane**	--	--	--	4	10	.40
156B	Washington Co. Edmunds #4	A. Davis	6	6	1.00	7	5	1.40
157	Kennebec Co. Fayette	H. Brown	12	10	1.20	5	10	.50
TOTAL			375	328	1.14	346	320	1.08
MARYLAND								
4	Anne Arundel Co. Brock Bridge Rd.	C. Robbins	5	7	.71	3	7	.43
TOTAL			5	7	.71	3	7	.43

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and location	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MASSACHUSETTS</u>								
2	Worcester Co. Gate 40, Quabbin	W. Sheldon	9	13	.69	7	13	.54
3	Worcester Co. MDC Quabbin	W. Sheldon	10	15	.67	11	14	.79
4	Franklin Co. No. Leverett	E. Howard, Jr.	8	9	.89	9	9	1.00
6	Franklin Co. Shutesbury #6	G. Hobart	12	9	1.33	8	9	.89
7	Barnstable Co. Marston Mills	W. Fitzpatrick	9	11	.82	12	11	1.09
8	Berkshire Co. Williamston	F. Richardson	7	7	1.00	5	7	.71
9	Plymouth Co. Halifax & Plympton	J. D. Carlo	--	--	--	6	12	.50
10	Franklin Co. Leverett	W. Sheldon	--	--	--	6	8	.75**
TOTAL			55	64	.86	52	63	.83
<u>NEW BRUNSWICK</u>								
1	Westmorland Co. Rockport Rd.	C. Bartlett	6	8	.75	--	--	--
2	Westmorland Co. Cookville Rd.	A. Erskine**	10	8	1.25	4	8	.50
6	Albert Co. Turtle Creek	H. Whitman	15	10	1.50	19	11	1.73
8	York Co. Richibucto Rd.	B. Wright	11	10	1.10	15	10	1.50
9	York Co. Kingsley Bridge	N. Brown	6	10	.60	6	10	.60
10	York Co. Charters Settlement	P. Pearce	10	11	.91	9	10	.90

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>NEW BRUNSWICK (continued)</u>								
11	York Co.	D. Inch	8	10	.80	8	10	.80
	Mazerol Settlement							
12	Charlotte Co.	C. Bartlett	7	8	.88	8	8	1.00
	Rolling Dam							
13	Westmorland Co.	A. Erskine**	10	11	.91	6	7	.86
	Fairfield							
14	Charlotte Co.	C. Bartlett	16	10	1.60	10	10	1.00
	Lawrence Sta.							
16	Westmorland Co.	S. Whitman	16	15	1.07	13	11	1.18
	Berry Mills Rd.							
17	Westmorland Co.	R. Hunter	12	11	1.09	--	--	--
	Cape Breton Rd.							
18	Westmorland Co.	P. Candido	8	14	.57	--	--	--
	Pacific Junction Rd.							
19	Westmorland Co.	H. Whitman	--	--	--	8	8	1.00
	Scoudouc Rd.							
<b>TOTAL</b>			109	103	1.06	98	95	1.03

NEW HAMPSHIRE

1	Coos Co.	C. Carson	5	11	.45	8	11	.73
	Pittsburg							
2	Merrimack Co.	S. Dole, Jr.	6	7	.86	2	8	.25
	No. Pembroke							
3	Merrimack Co.	S. Dole, Jr.	3	6	.50	4	6	.67
	Pembroke Hill							
6	Merrimack Co.	F. Fogg	3	11	.27	1	11	.09
	Webster							
7	Strafford Co.	H. Brown	10	7	1.43	6	7	.86
	Durham Point Rd.							
8	Strafford Co.	H. Brown	9	8	1.13	4	7	.57
	Rochester Rd.							
9	Strafford Co.	H. Brown	9	9	1.00	7	9	.78
	Tolend Rd.							
10	Merrimack Co.	D. Allison	4	9	.44	1	9	.11
	Hopkinton-Webster							

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>NEW HAMPSHIRE</u> (continued)								
11	Merrimack Co. Pembroke	H. Lacaillade	1	6	.17	--	--	--
13	Rockingham Co. Mill Pond Rd.	H. Brown	7	11	.64	8	11	.73
15	Strafford Co. Mt. Misery Rd.	H. Brown	5	9	.56	6	9	.67
16	Strafford Co. Ten Rod Rd.	H. Brown	7	9	.78	7	9	.78
17	Merrimack Co. III No. Pembroke	S. Dole, Jr.	6	6	1.00	7	6	1.17
18	Rockingham Co. Bay Rd.	H. Brown	10	8	1.25	8	7	1.14
TOTAL			84	111	.76	69	110	.63
<u>NEW JERSEY</u>								
2	Atlantic Co. Tuckahoe	F. Ferrigno	7	9	.78	7	9	.78
3	Sussex Co. Walpack	R. Spinks	2	8	.25	4	8	.50
4	Cumberland Co. Haleyville P.S. Grnds.	E. Tomlin	2	10	.20	2	10	.20
TOTAL			11	27	.41	13	27	.48
<u>NEW YORK</u>								
1	Albany Co. Partridge Run	D. Shierbaum	8	6	1.33	7	7	1.00
2	Albany Co. Dunbar Hollow	C. Brown**	6	11	.55	3	10	.30
5	Allegany Co. Hanging Bog	F. Zaik	2	8	.25	2	8	.25

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
NEW YORK (continued)								
8	Essex Co. Putnam Creek	G. Davis	13	11	1.18	17	11	1.55
9	Essex Co. Wilmington	G. Chase	13	10	1.30	11	10	1.10
10	Franklin Co. Lyon Brook	J. Hart	17	10	1.70	14	10	1.40
11	Hamilton Co. Indian Lake (Cedar R.)	R. Robert	1	6	.17	4	7	.57
12	Onondaga Co. Baldwinsville	L. Stegeman**	13	10	1.30	29	10	2.90
14	Jefferson Co. Ives St. Rd.	S. Northrup	4	4	1.00	6	4	1.50
15	Oswego Co. Happy Valley	H. Weiskotten	7	6	1.17	--	--	--
16	Saratoga Co. Reynolds Corner	D. Lynch	5	6	.83	5	7	.71
22	Washington Co. Adamsville	D. Lynch	5	8	.62	4	8	.50
24	Jefferson Co. Rodman	S. Northrup	7	5	1.40	8	4	2.00
25	Wayne Co. Wayne Center	R. Cottrell	8	6	1.33	12	6	2.00
26	Chautauqua Co. Ashville	G. Noble	7	12	.58	5	9	.56
27	Chautauqua Co. Gerry	G. Noble	7	11	.64	6	9	.67
28	Tompkins Co. Conn. Hill #1	R. Cameron	3	11	.27	2	11	.18
29	Tompkins Co. Conn. Hill #2	R. Cameron	2	7	.29	6	7	.86
30	Tompkins-Schuyler Cos. Conn. Hill #3	R. Cameron	3	10	.30	2	10	.20

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer



Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>NEW YORK</u> (continued)								
31	Tompkins-Schuyler Cos. Conn. Hill #4	R. Cameron	5	8	.62	3	7	.43
32	Suffolk Co. Southampton	J. Minick	--	--	--	6	10	.60
33	Cattaraugus Co. Red House	W. Shirey	14	13	1.08	10	13	.77
34	Cattaraugus Co. Wayman Branch	F. Evans	7	12	.58	5	11	.45
35	Chautauqua-Cattar Cos. Dredge Ditch Rd.	C. Mount	6	11	.55	5	11	.45
36	Dutchess Co. Shenandoah	M. Rodak	6	9	.67	6	9	.67
37	Madison Co. Nelson	H. Weiskotten	14	7	2.00	--	--	--
38	Steuben Co. Demons Pond	F. Slater	4	6	.67	5	6	.83
39	Suffolk Co. Manorville	G. Raynor	4	11	.36	5	12	.42
40	Rensselaer Co. Cherry Plain	E. King	4	13	.31	10	14	.71
41	Suffolk Co. Fort Salonga	E. Mudge	2	7	.29	1	7	.14
42	Wayne Co. Huckeberry Swamp	R. Cottrell	11	6	1.83	13	6	2.17
43	Wayne Co. No. Wolcott	R. Cottrell	6	6	1.00	6	6	1.00
44	Suffolk Co. Peconic R.	F. Pradon	6	11	.55	--	--	--
TOTAL			193	254	.76	212	250	.85

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>NORTH CAROLINA</u> (continued)								
1	Chatham Co. New Hope Farm	C. Bampton	4	8	.50	--	--	--
2	Burke Co. Glen Alpine	J. Collins	2	6	.33	0	6	.00
3	Burke Co. Southern R.R. (E)	J. Collins	--	--	--	2	8	.25
12	Columbus Co. Boardman	J. Bardwell	0	8	.00	0	8	.00
13	Beaufort Co. Market St.	O. Florshutz & A. Noltemeier	1	8	.12	2	8	.25
14	Carteret Co. Bayside Farm (Crab Pt.)	M. Cecil	--	--	--	1	9	.11
15	Caswell Co. Hyco Cr.	C. Bampton	0	4	.00	--	--	--
16	Robeson Co. Bladensboro	J. Bardwell	--	--	--	0	8	.00
18	Davison-Montgomery Cos. Old Tuckerton Rd.	D. Taylor	--	--	--	0	9	.00
20	Columbus Co. Bolton	J. Bardwell	1	8	.12	--	--	--
22	Davie Co. Farmington	T. Cherry	0	6	.00	0	6	.00
23	Chowan Co. Fish Hatchery	G. Burdick	--	--	--	0	7	.00*
24	Chowan Co. Old Marine Base	G. Ross	--	--	--	1	8	.12*
25	Martin Co. Intersect, 1416 & 1417	G. Burdick	--	--	--	0	7	.00*
TOTAL			3	28	.11	2	28	.07

NOVA SCOTIA

2	Kings Co. Greenfield	R. Tufts	0	8	.00	3	10	.30
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\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
NOVA SCOTIA (continued)								
3	Kings Co. Melanson Mt.	R. Tufts	4	7	.57	2	9	.22
5	Annapolis Co. Beaconfield	M. Bent	2	9	.22	--	--	--
6	Annapolis Co. Wilmot	M. Bent	1	7	.14	--	--	--
7	Kings Co. Davidson	R. Tufts	3	8	.38	3	10	.30
8	Annapolis Co. Douglas Rd.	M. Bent	2	9	.22	--	--	--
9	Cumberland Co. Boars Back Rd. (south)	D. Lawson	10	11	.91	11	11	1.00
15	Kings Co. Lake George Rd.	D. Dodds	--	--	--	5	9	.56
16	Yarmouth Co. Leighton Sta.	M. Bent	1	9	.11	--	--	--
20	Antigonish Co. Pomquet	A. Erskine	1	12	.08	--	--	--
21	Cumberland Co. Boars Back Rd. (north)	D. Lawson	11	11	1.00	5	11	.45
23	Inverness Co. River Denys	A. Erskine	3	8	.38	--	--	--
24	Kings Co. Aldershot	F. Payne	11	17	.65	9	10	.90
27	Kings Co. New Ross Rd.	F. Payne	8	11	.73	1	10	.10
29	Cape Breton Co. Mira River	H. Thurber	5	12	.42	8	12	.67
30	Cape Breton Co. Salmon River	H. Thurber	6	12	.50	--	--	--
31	Digby Co. Long Island	H. Thurber	13	12	1.08	--	--	--
32	Inverness Co. Lake Ainslie-Sky River	H. Thurber	7	12	.58	4	7	.57

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>NOVA SCOTIA (continued)</u>								
33	Inverness Co. Lake O'Law	H. Thurber	5	10	.50	3	10	.30
34	Inverness Co. River Denys-Munroe Br.	H. Thurber	8	11	.73	--	--	--
35	Kings Co. Coldbrook	F. Payne	7	10	.70	--	--	--
36	Richmond Co. St. Peters Inlet	H. Thurber	6	10	.60	--	--	--
37	Victoria Co. Lower Baddeck River	S. MacLeod	4	12	.33	--	--	--
38	Victoria Co. Upper Baddeck River	H. Thurber	14	13	1.08	--	--	--
39	Victoria Co. Middle River	S. MacLeod**	7	15	.47	4	11	.36
40	Victoria Co. Port Bevis	H. Thurber	2	10	.20	--	--	--
41	Cape Breton Co. Blacketts Lake	H. Thurber	--	--	--	7	9	.78*
42	Kings Co. Billtown	F. Payne	--	--	--	2	10	.20*
43	Victoria Co. Baddeck Bay	S. MacLeod	--	--	--	6	8	.75*
44	Victoria Co. Forks Baddeck	H. Thurber	--	--	--	4	7	.57*
45	Victoria Co. Lower Middle River	H. Thurber	--	--	--	5	10	.50*
46	Kings Co. Black River-River Road	R. Tufts	--	--	--	3	11	.27*
TOTAL			71	122	.58	53	111	.48

PENNSYLVANIA

1	Centre Co. Barrens	R. Wingard	14	11	1.27	9	11	.82
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\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>PENNSYLVANIA</u> (continued)								
2	Huntington Co. Stone Valley	J. Lindzey & J. Barclay**	7	12	.58	10	11	.91
3	Blair Co. Bald Eagle	H. Henry	--	--	--	19	10	1.90
4	Centre Co. Port Matilda	L. Mansell	11	10	1.10	11	10	1.10
5	Centre Co. Martha Furnace	S. Liscinsky	11	10	1.10	9	10	.90
6	Centre Co. Julian	S. Liscinsky	4	8	.50	6	9	.67
8	Mifflin Co. Atkinson Mills	J. Taylor	8	8	1.00	8	8	1.00
9	Juniata Co. Mifflin	W. Taylor	2	4	.50	2	4	.50
11	Centre Co. New Bloomfield	J. Sitlinger	0	7	.00	2	7	.29
12	Perry Co. New Germantown	J. Moyle	0	7	.00	--	--	--
13	Westmoreland Co. Andara	J. Liss	3	5	.60	4	5	.80
14	Huntingdon Co. Neff Mills	R. Melton	5	8	.62	4	8	.50
15	Pike Co. Blooming Grove	A. Kriefski	9	9	1.00	6	7	.86
19	Indiana Co. Penn Run	J. J. Kriz & J. M. Kriz	6	7	.86	6	7	.86
20	Lackawanna Co. Thornhurst	J. Altmiller	8	12	.67	5	10	.50
21	Luzerne Co. Freeland	S. Laputka	4	8	.50	6	8	.75
22	Crawford Co. Geneva	H. Pratt	6	6	1.00	5	6	.83
23	Venango Co. Emlenton	C. Decker	3	4	.75	4	4	1.00

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>PENNSYLVANIA</u> (continued)								
29	Erie Co. Albion	W. Jones	2	8	.25	2	9	.22
32	Mercer Co. Sharpsville	D. Carbone	8	8	1.00	6	9	.67
35	Tioga Co. Fall Brook	A. Hayden	10	14	.71	7	14	.50
37	Centre Co. Buffalo Run	H. Henry	0	6	.00	0	10	.00
38	Indiana Co. Aultman Run	J. Kriz & A. Zaycosky	13	13	1.00	7	10	.70
39	Indiana Co. Clarksburg	J. Kriz & A. Zaycosky	8	10	.80	11	11	1.00
40	Centre Co. Romola	W. Richter	7	9	.78	4	7	.57
43	Jefferson Co. Falls Creek	S. Liscinsky	8	8	1.00	15	10	1.50
44	Luzerne Co. Drums	S. Laputka	8	10	.80	9	10	.90
46	Crawford Co. Linn Rd.	L. Badger	--	--	--	10	10	1.00
47	Blair Co. Canoe Ck.	G. Wunz	5	10	.50	--	--	--
48	Perry Co. New Germantown #2	J. Moyle	--	--	--	6	12	.50
TOTAL			165	215	.77	158	215	.73
<u>PRINCE EDWARD ISLAND</u>								
4	Prince Co. Conway	Cst. D. Bartlett**	9	13	.69	5	9	.56

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 6.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
East of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>PRINCE EDWARD ISLAND (continued)</u>								
5	Kings Co. Martinvale	Cst. I. Oland**	6	8	.75	8	9	.89
6	Kings Co. Fortune	Cst. I. Oland**	8	8	1.00	9	9	1.00
8	Queens Co. Point DeRoche	Cst. J. Cook	6	9	.67	3	8	.38
TOTAL			29	38	.76	25	35	.71
<u>VERMONT</u>								
7	Franklin Co. Swanton #1, Maquam Rd.	E. Chandler	5	11	.45	5	11	.45
14	Franklin Co. Swanton #2, Rt. 78	R. Minns	9	8	1.12	6	8	.75
19	Chittenden Co. Pleasant Valley	O. Seelye	11	12	.92	12	12	1.00
20	Franklin Co. Highgate	A. Vanslette	2	5	.40	2	5	.40
22	Chittenden Co. Westford	O. Seelye	14	11	1.27	8	11	.73
TOTAL			41	47	.87	33	47	.70

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>ILLINOIS</u>								
2	LaSalle Co.	C. Bavin**	3	10	.30	2	9	.22
	Dimmick Hill (Deer Park)							
3	Mason Co.	W. French	4	11	.36	0	11	.00
	Havana							
4	Bureau-Putnam Cos.		4	11	.36	4	11	.36
	Arispie	R. VonDane**						
5	Williamson Co.	R. Personius	0	11	.00	--	--	--
	Grass	& P. Ferguson						
6	Williamson Co.	J. Rice	--	--	--	9	11	.82
	A-13	& P. Ferguson						
TOTAL			11	32	.34	6	31	.19
<u>INDIANA</u>								
1	Daviess Co.	R. Hamilton	--	--	--	3	3	1.00
	Glendale (Harrison) #1							
2	Daviess Co.	K. Nettles	--	--	--	0	9	.00
	Glendale #2							
3	LaGrange Co.	D. Martin	9	6	1.50	13	6	2.17
	Lima #1							
4	LaGrange Co.	D. Martin	7	6	1.17	9	6	1.50
	Springfield #2							
5	Newton Co.	D. Kennedy**	--	--	--	8	9	.89
	Beaver-McClellan							
6	Newton Co.	D. Kennedy**	--	--	--	10	8	1.25
	Willow Slough							
7	Pulaski Co.	R. Anderson	7	11	.64	7	11	.64
	Franklin #1							
8	Jennings Co.	T. Weddle	--	--	--	0	7	.00
	Crosley							
TOTAL			23	23	1.00	29	23	1.26

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer



Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>IOWA</u>								
1	Allamakee Co. Luster Heights	E. Klonglan & D. Hackbarth	2	8	.25	6	8	.75
2	Allamakee Co. Paint Creek	G. Hlavka	4	9	.44	3	10	.30
3	Allamakee Co. Sand Cover (U. Iowa)	G. Hlavka & L. Sowl	0	9	.00	2	8	.25
4	Clayton Co. Magill Creek	E. Klonglan & D. Hackbarth	1	9	.11	5	9	.56
5	Wasper Co. Rock Creek	G. Hlavka	2	7	.29	0	8	.00
6	Clayton Co. Buck Creek	E. Klonglan & D. Hackbarth	--	--	--	4	10	.40*
7	Winneshiek Co. Canoe Creek	G. Hlavka & D. Lynch	--	--	--	1	10	.10*
8	Bremer Co. Wapsie Bottoms	D. Adams & G. Hlavka	--	--	--	4	10	.40*
TOTAL			9	42	.21	16	43	.37
<u>KENTUCKY</u>								
4	Christian Co. Blue Hole Springs	C. Kays	0	9	.00	1	9	.11
14	Laurel Co. HWY. #30	O. Bryant	0	10	.00	5	10	.50
15	McCreary Co. Creekmore	C. Stephens	0	10	.00	0	10	.00
16	Magoffin Co. Salyersville	H. Stephens	4	11	.36	--	--	--
17	Anderson Co. Van Buren Rd.	R. Eversole	0	9	.00	--	--	--
18	Casey Co. Green River Valley	J. Storner	0	9	.00	3	8	.38

\* New route run in 1963

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>KENTUCKY</u> (continued)								
20	Taylor Co. Robinson Cr. Rd.	E. Bertram	0	11	.00	1	11	.09
22	McCracken Co. Olivet Church Rd.	W. Lee	0	9	.00	0	10	.00
23	Edmonson Co. Mammoth Cave	D. Russell	1	7	.14	5	9	.56
24	Anderson Co. Van Buren Rd. #2	J. Durrell	--	--	--	1	6	.17*
25	Union Co. Camp Breckenridge	W. Parker	--	--	--	0	9	.00*
26	McCracken Co. W. Ky. Mgmt. Area	W. Lee	--	--	--	0	9	.00*
TOTAL			1	65	.02	15	67	.22
<u>MICHIGAN</u>								
1	Alger-Schoolcraft Cos. Stutts Creek	D. Arnold.	12	11	1.09	11	11	1.00
6	Chippewa Co. Drummond Is.	G. Ammann**	15	10	1.50	16	10	1.60
9	Clinton-Shiawassee Cos. Rose Lake	R. Huff**	4	8	.50	7	8	.88
13	Gladwin Co. Cedar River	A. Boyce	--	--	--	33	10	3.30
15	Houghton Co. Hopes Creek	R. Rafferty	9	7	1.29	11	7	1.57
18	Ingham Co. Dansville Game Area	D. Douglass	5	10	.50	6	10	.60
19	Iron Co. Lake Ellen	I. Thomson	10	10	1.00	15	10	1.50
24	Lake Co. Lake #1	P. Baumgras	5	8	.62	7	8	.88

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MICHIGAN</u> (continued)								
26	Luce Co. McPhee's Ldg.	R. Strong**	15	8	1.88	12	9	1.33
30	Ogemaw Co. Greenwood Rd.	J. Cook	15	10	1.50	7	10	.70
32	Otsego Co. Ford #1	O. Failing	8	8	1.00	4	7	.57
34	Roscommon Co. Block Plant	R. Blouch	8	12	.67	11	11	1.00
35	Roscommon Co. Michelson	R. Blouch	5	11	.45	13	12	1.08
37	Baraga Co. Silver River	R. Rafferty	13	8	1.62	13	8	1.62
38	Baraga Co. Clear Creek	R. Rafferty	8	10	.80	12	10	1.20
63	Gladwin Co. Gladwin #2	A. Boyce	--	--	--	26	10	2.60
66	Luce Co. Natalie #2	R. Strong**	11	8	1.38	8	8	1.00
67	Mason Co. Mason Co. #1	T. Mackin	--	--	--	7	12	.58
73	Otsego Co. Mainstee	R. Rasmussen	6	11	.55	11	11	1.00
76	Dickinson Co. Channing	I. Thomson	14	11	1.27	16	11	1.45
77	Mainstee Co. Thompsonville	W. Goudy	14	9	1.56	14	9	1.56
78A	Alpena Co. Alpena-N. Wellington	T. Fairbanks	--	--	--	16	12	1.33
78B	Montmorency Co. Donnelly Truck Trail	D. Shetter**	--	--	--	8	11	.73
79	Antrim Co. Alba	J. Winship	14	10	1.40	22	10	2.20
80	Barry Co. Yankee Springs	C. Storkan	10	10	1.00	15	9	1.67

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MICHIGAN</u> (continued)								
81	Cheboygan Co. Berry Creek (Indian R. #1)	G. Ammann**	8	8	1.00	4	7	.57
82	Cheboygan Co. Indian R. #2	J. Winship	11	8	1.38	--	--	--
83	Cheboygan Co. Tin Bridge	J. Winship	30	9	3.33	20	9	2.22
85	Chippewa Co. Pendall's Cr. Hatchery	P. Drake	3	3	1.00	3	3	1.00
86	Chippewa Co. Dunbar	R. Strong	11	10	1.10	13	10	1.30
87	Dickinson Co. Floodwood Rd. #1	A. & M. DeGayner	18	8	2.25	13	8	1.62
88	Gratiot Co. Gratiot-Saginaw #1	W. Palmer**	10	10	1.00	19	10	1.90
89	Gratiot Co. Gratiot-Saginaw #2	R. Huff	19	12	1.58	22	11	2.00
90	Huron Co. Swamp Route	C. Bradon	13	9	1.44	15	7	2.14
91	Kalamazoo Co. Hampton Lake	C. Cook	--	--	--	8	9	.89
92	Midland Co. Homer TWP	L. Line	6	16	.38	9	14	.64
93	Ontonagon Co. Matchwood	Mrs. R. Lahde	4	6	.67	8	6	1.33
95	Ontonagon Co. Big Bear Airport (Ont. # 2)	Mrs. R. Lahde	2	6	.33	10	6	1.67
96	Osceola Co. Ewart	R. Aartila	13	9	1.44	8	9	.89
97	Osceola Co. Doc & Tom Creek	R. Aartila	19	15	1.27	18	10	1.80
98	Otsego Co. Deer Camp Trail	H. Townsend	7	7	1.00	7	7	1.00

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued).

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MICHIGAN</u> (continued)								
99	Van Buren Co. Wolf L. Run	Mrs. D. Beshgetoor	11	11	1.00	9	13	.69
100	Antrim Co. North Jordan	J. Winship	16	8	2.00	23	9	2.56
101	Barry Co. Rutland	C. Storkan	9	12	.75	6	8	.75
102	Benzie Co. Little Betsie River	W. Goudy	11	7	1.57	18	7	2.57
103	Cheboygan Co. Andy Grand Rd.	J. Winship	30	11	2.73	25	11	2.27
104	Dickinson Co. Floodwood Plains	D. Wenzel	8	10	.80	5	10	.50
105	Emmet Co. Douglas Lake	F. DuFon**	11	8	1.38	17	8	2.12
106	Emmet Co. E. Br., Maple River	F. DuFon**	25	8	3.12	19	8	2.38
107	Kalamazoo Co. Augusta	R. VanDeusen & T. Smith	--	--	--	5	10	.50
108	Kalamazoo Co. Gull L. Outlet	R. VanDeusen & T. Smith	--	--	--	6	10	.60
109	Lapeer Co. Deerfield-N. Branch	C. Douville	3	11	.27	7	11	.64
110	Schoolcraft Co. Old Seney Rd.	P. Suich	0	6	.00	--	--	--
111	Tuscola Co. Apache	H. Tubbs	4	9	.44	6	10	.60
112	Tuscola Co. Wells	H. Tubbs	2	10	.20	5	11	.45
113	Van Buren Co. Whiskey Run	Mrs. D. Beshgetoor	10	9	1.11	17	10	1.70
114	Delta-Marquette Cos. Boney Falls	D. Arnold	--	--	--	8	11	.73
115	Dickinson Co. Floodwood Rd. #2	A. & M. DeGayner	17	11	1.55	14	8	1.75

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>MICHIGAN</u> (continued)								
116	Gogebic Co. Erwin	J. Pann	11	9	1.22	13	12	1.08
117	Midland Co. Lee-Greendale	L. Line	18	16	1.12	23	14	1.64
118	Midland Co. Pine River	L. Line	5	8	.62	6	8	.75
119	St. Clair McClain Rd.	C. Douville	9	9	1.00	21	9	2.33
120	Van Buren Co. Lawton Creek	J. Cook	2	7	.29	4	8	.50
121	Allegan Co. Bear Creek	D. Allen	--	--	--	7	11	.64*
122	Delta Co. Perkins	J. Vogt	--	--	--	13	8	1.63*
123	Dickinson Co. Wells Grade	D. Wenzel	--	--	--	7	10	.70*
124	Grand Traverse Co. Widenhammer	F. Kellum	--	--	--	10	8	1.25*
125	Ingham Co. Haslett	G. Ammann	--	--	--	7	7	1.00*
126	Marquette Co. Yalmer	T. Prawdzik	--	--	--	16	8	2.00*
127	Schoolcraft Co. Co. #436	G. Sherwood	--	--	--	7	9	.78*
128	Oscoda Co. Mio	J. Byelich	--	--	--	6	8	.75
TOTAL			566	492	1.15	638	481	1.33

MINNESOTA

1	Cass Co. Longville #1	H. Pinkham	--	--	--	4	3	1.33
10	Itaska & Aitkin Cos. Span #1	J. Janeczek*	5	7	.71	6	7	.86

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
MINNESOTA (continued)								
11	Carlton Co. Exp. Forest	W. Marshall**	6	10	.60	11	10	1.10
17	Carlton Co. Rifle Range	L. Angell	--	--	--	9	8	1.12
18	Pine Co. St. Croix River	B. Ellig	--	--	--	4	10	.40
19	Pine Co. Meadowlawn (Snake River)	B. Ellig	7	10	.70	5	8	.62
24	Chisago Co. Lent Twp. Rd.	B. Fashingbauer	1	8	.12	1	8	.12
26	Itaska Co. N. Bustie Rd.	B. Fashingbauer & J. Idstrom	4	6	.67	--	--	--
27	Lake Co. Co. Rd. #132	L. Downey	5	9	.56	7	9	.78
28	Mille Lacs Co. Headquarters Unit	O. Hagman	7	8	.88	8	8	1.00
29	Mille Lacs Co. Quarry-Ranch Rd.	R. Alter	4	7	.57	6	7	.86
30	Morrison Co. Camp Ripley	B. Fashingbauer & J. Idstrom	5	7	.71	5	7	.71
31	Winona Co. Whitewater #1	N. Gulden**	1	6	.17	1	6	..17
32	Aitkin Co. Refuge Boundary	C. Alexander	10	9	1.11	--	--	--
33	Mille Lacs Co. Korsness-Jones	O. Hagman	7	8	.88	11	8	1.38
34	Mille Lacs Co. Schubert-Tower Rd.	R. Alter	4	8	.50	6	8	.75
35	St. Louis Co. J. Duluth, Normana & Fox Farm Rds.	Mrs. J. Green	11	9	1.22	16	9	1.78
36	Winona Co. Whitewater #2	N. Gulden**	2	7	.29	3	7	.43
37	Winona Co. Whitewater #3	N. Gulden**	4	5	.80	3	5	.60
38	Mille Lacs Co. Bock Route	L. Koopmann	--	--	--	6	8	.75*
TOTAL			69	109	.63	89	107	.83

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
OHIO								
4	Ashtabula Co. Andover	M. Gilfillan	12	9	1.33	13	9	1.44
5	Ashtabula Co. Ashtabula	M. Gilfillan	16	10	1.60	21	11	1.91
6	Portage Co. Ferguson Rd.	Dr. L. Orr	2	5	.40	--	--	--
9	Fulton & Lucas Cos. Maumee Forest	E. Bosak	4	10	.40	5	9	.56
17	Erie Co. Resthaven	D. Haney	19	12	1.58	19	9	2.11
19	Delaware Co. Delaware Dam #1	K. Martinson	4	10	.40	--	--	--
21	Erie Co. Margaretta #1	D. Haney	11	13	.85	--	--	--
22	Erie Co. Margaretta #2	D. Haney	10	15	.67	--	--	--
25	Delaware Co. Delaware Dam #2	E. Hutchins**	7	9	.78	6	9	.67
27	Delaware-Marion Cos. Delaware Dam #3	E. Hutchins	--	--	--	4	9	.44*
TOTAL			58	50	1.16	64	47	1.36

ONTARIO

3	Russell Co. Vars	F. Schultz	6	6	1.00	--	--	--
4	Carleton Co. Carp #1	V. Solman	6	6	1.00	5	6	.83
5	Carleton Co. Carp #2	V. Solman	3	7	.43	4	7	.57
7	Frontenac Co. Westbrook	W. Lamb	7	7	1.00	8	10	.80
9	Frontenac Co. Holleford	Mrs. H. Quillian	3	7	.43	2	7	.29

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer



Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>ONTARIO</u> (continued)								
10	Frontenac Co. Collins Cr. (Perth Rd.)	A. Bell	0	6	.00	3	6	.50
12	Carleton Co. Stittsville	F. Schultz	10	8	1.25	--	--	--
13	Carleton Co. Carp #3	V. Solman	5	13	.38	6	13	.46
14	Frontenac Co. Sharpton	A. Bell	6	9	.67	4	10	.40
TOTAL			36	61	.59	32	59	.54
<u>WEST VIRGINIA</u>								
1	Randolph Co. Kumbrabow Forest	J. Chadwick	5	7	.71	8	7	1.14
2	Grant Co. Bayard to Henry	T. Sanford	6	12	.50	2	12	.17
3	Pocohantas Co. Thorny Creek Rd.	R. Bailey	1	6	.17	1	6	.17
7	Tucker Co. State Route 32	W. Lesser	3	6	.50	9	6	1.50
8	Nicholas Co. Routes 19 & 41	R. Butterfield	--	--	--	1	7	.14
10	Preston Co. Lake O'Woods	R. Bailey	3	6	.50	--	--	--
13	Preston Co. Decker's Creek	B. Yednock	2	4	.50	3	4	.75
14	Barbour Co. Pleasant Creek	W. Lesser	8	7	1.14	5	7	.71
15	Randolph Co. Mill Creek	W. Lesser & B. Yednock	0	16	.00	--	--	--
17	Mason Co. McClintic W. Sta.	J. Donnelly	6	10	.60	6	9	.67

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>WEST VIRGINIA (continued)</u>								
18	Monroe Co. Cove Creek	D. Gilpin	3	10	.30	4	10	.40
19	Randolph Co. Salt Lick Run Rd.	W. Lesser	4	5	.80	7	5	1.40
TOTAL			38	67	.57	45	66	.68
<u>WISCONSIN</u>								
1	Langlade Co. Ackley (Highway #64)	M. Morehouse	22	14	1.57	--	--	--
2	Lincoln Co. New Wood	E. Morrison	4	10	.40	10	10	1.00
5	Price Co. LeTourneau Rd. (Flambeau)	C. Wiita**	4	11	.36	8	11	.73
8	Adams Co. Leola	F. Hamerstrom, Jr.--	--	--	--	7	9	.78
9	Clark Co. Hewitt	L. Reynoldson	2	12	.17	0	12	.00
10	Forest Co. Argonne	H. Duncan	2	10	.20	3	10	.30
11	Juneau Co. Grand Dike	C. Pospichal	3	10	.30	6	10	.60
12	Juneau Co. Yellow River	C. Pospichal	14	9	1.56	15	9	1.67
13	Marathon Co. Highway 153 (Sitkos Tavern)	D. Corbin	3	7	.43	5	8	.62
14	Oneida Co. Lynne	H. Duncan	4	10	.40	2	11	.18
15	Portage Co. Hull	A. Epple	8	6	1.33	8	6	1.33
16	Rusk Co. Big Bend	L. Reynoldson	1	10	.10	2	8	.25

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

Table 7.--Comparison of 1962 and 1963 Woodcock Singing Ground Counts  
West of the Appalachians (continued)

Rt. no.	County and locality	Observer	1962			1963		
			Total birds	Total stops	Mean birds per stop	Total birds	Total stops	Mean birds per stop
<u>WISCONSIN</u> (continued)								
17	Taylor Co. Pershing	L. Reynoldson	2	10	.20	0	8	.00
18	Waupaca Co. Lind	M. Stinnett**	1	9	.11	2	9	.22
19	Waushara Co. Dakota	M. Stinnett	0	9	.00	3	9	.33
20	Wood Co. Remington	J. Kotok	20	14	1.43	17	14	1.21
21	Wood Co. Sand Hill	F. Hamerstrom & D. Berger	--	--	--	1	9	.11
TOTAL			68	137	.50	81	135	.60

\* New route run in 1963

\*\* 1963 observer; see last year's report for 1962 observer

The Department of the Interior, created in 1849, is our Nation's Department of Natural Resources, concerned with management, conservation, and development of water, wildlife, fish, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

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UNITED STATES DEPARTMENT OF THE INTERIOR

Stewart L. Udall, Secretary

Frank P. Briggs, Assistant Secretary for Fish and Wildlife

FISH AND WILDLIFE SERVICE

Clarence F. Pautzke, Commissioner

BUREAU OF SPORT FISHERIES AND WILDLIFE

Daniel H. Janzen, Director